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AUTHOR	Christal, Mark; de Montano, Marty Kreipe; Resta, Paul; Roy, Loriene
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ABSTRACT

Museums have long been the repository of important cultural items. They make these items available to public view in exhibitions in specially designed architectural spaces, and more recently, in the virtual spaces provided on the World Wide Web and on CD-ROM. By making their collections accessible to the public in carefully crafted and coherent presentations, museums serve an important mission of perpetuating cultural heritage through the educational experiences they offer to the public. Schools share a mission of cultural preservation with museums, making them natural partners in the development of effective educational experiences for young citizens. The creation of virtual museums as classroom learning projects is one emerging strategy schools have explored that makes use of new digital media, the World Wide Web and multimedia authoring. This paper presents a culturally responsive emerging model for school-museum collaboration. The Four Directions Project has been working with American Indian Schools to explore the uses of technology for culturally responsive teaching. One approach Four Directions is exploring is school-museum collaboration for student-created virtual museum projects. A Four Directions Model for school-museum partnerships has emerged from these experiences. Two example projects are described and the benefits of virtual museum projects are discussed. (Contains 11 references.) (AEF)

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Virtual Museums from Four Directions: An Emerging Model for School-Museum Collaboration

Mark Christal
The University of Texas at Austin
Learning Technology Center
United States
mark@teachnet.edb.utexas.edu

Marty Kreipe de Montano
Smithsonian National Museum of the American Indian
United States
demontanom@nmaicrc.si.edu

Paul Resta
The University of Texas at Austin
Learning Technology Center
United States
resta@mail.utexas.edu

Loriene Roy
The University of Texas at Austin
Graduate School of Library Information Science
United States
loriene@gslis.utexas.edu

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Abstract: The Four Directions Project has been working with American Indian Schools to explore the uses of technology for culturally responsive teaching. One approach Four Directions is exploring is school-museum collaborations for student-created virtual museum projects. A Four Directions Model for school-museum partnerships has emerged from these experiences. Two example projects are described and the benefits of virtual museum projects is discussed.

Museums and Schools in a Pluralistic Society

Museums have long been the repository of important cultural items. They make these items available to public view in exhibitions in specially designed architectural spaces, and more recently in the virtual spaces provided on the World Wide Web and on CD-ROM. By making their collections accessible to the public in carefully crafted and coherent presentations, museums serve an important mission of perpetuating our cultural heritage through the educational experiences they offer to the public.

Schools share a mission of cultural preservation with museums, making them natural partners in the development of effective educational experiences for young citizens. Schools are also responding to the challenges of the 21st century by integrating new technologies into classroom practice. The creation of virtual museums as classroom learning projects is one emerging strategy schools have explored that makes use of new digital media, the World Wide Web and multimedia authoring. Some of these projects have been created in collaboration with public museums (McKenzie, 1996; McKenzie, 1997; Roy & Christal, 2000).

Because of its history of colonialism and immigration, the culture of the United States is pluralistic, reflecting throughout vital contributions from hundreds of indigenous American cultures as well as from countries in every area of the world. American education, however, remains staunchly Eurocentric. It largely fails at being truly American, reflecting the diversity of the nation and diversity of learning styles (Banks, 1997). As a consequence, schools fail to take advantage of the cultural knowledge many non-European American children bring to school that can be used to advance academic success. Also, by not embracing the contributions to America's pluralistic culture made by non-European American students' communities, educators fail to motivate these students to excel at school. Culturally responsive teaching involves taking strategic advantage of the cultural knowledge and contributions of students' home communities to promote academic success (Gay, 2000; Pewewardy, 1999).

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Many museums in the United States have collections that do reflect the cultural diversity of the nation. However, much of the interpretation that is presented in museum exhibitions tends to reflect the dominant Eurocentric world view. To resist this trend, the Smithsonian National Museum of the American Indian (NMAI) is setting a standard for interpretation of Native American collections by Native Americans. The museum brings Indian people to facilities as respected representatives of their cultures. Museum staff members collaborate with Native Americans in the interpretation of the items in its collections that came from their communities. For the NMAI, contemporary Native Americans, as direct descendants of the creators of its collections, act as culture bearers who have the most direct experience of the meaning that the objects hold. It is an expertise the museum values and relies upon.

This paper will present a culturally responsive emerging model for school-museum collaboration. The model has grown out of experiences of Native American schools working with museums with significant American Indian collections to create virtual museums that reflect their cultures and serve to present and preserve the students' indigenous heritage.

The Four Directions Model for School-Museum Partnerships

Four Directions is a five-year project funded through a U. S. Department of Education Challenge grant. Its purpose is to promote the development of technology-supported culturally responsive teaching for Native American students. The partners in the project include nineteen American Indian schools in ten states that are part of the Bureau of Indian Affairs school system, four university partners, and two museum partners.

The Four Directions project has been motivated by the lack of available curriculum that is responsive to the cultures of Native American children and the recognition that technology can provide a way to empower local communities to create curriculum that fits their needs (Allen et al., 1999). The need for culturally responsive approaches has been heightened by the historical circumstances of American Indian education. From the 16th century beginnings of formal education for North American Indians, education was seen as a way to coerce Indians into giving up their culture. By the late 19th century, forced assimilation was the official government policy. This policy was enforced in various ways including removing Indian people from their homelands and setting up boarding schools for Indian students that were located far from student's family and where students were forbidden to speak their language, practice their religion, or to express anything of their traditional cultures. (Adams, 1995). Many Native Americans clung to their cultures the best they could under the circumstances. In the 20th century European-Americans gradually learned to value the cultures of the continent's First Peoples and to celebrate the cultural diversity of the nation. American Indian schools began to include aspects of Native cultures in their curriculum, and since the mid-1960s, an increasing number of American Indian schools have come under direct tribal control (Szasz, 1977; Tippeconnic III, 1999). However, because of these historical circumstances, much of what remains of American Indian material culture resides away from their homelands in museums across the nation and in private collections.

The Four Directions project has been fortunate in having two museum partners that have allowed project participants to explore the potential of school-museum collaborations that give Native American students access to the important cultural property that remains in museum collections. These experiences are providing an evolving concept for museum-school-community collaboration that serves the missions and needs of all participants—what we are calling the Four Directions model for virtual museum collaborations. Three aspects of our experiences with virtual museum projects guide the Four Directions model:

- *Cultural Responsive Teaching* – Virtual museum projects are culturally responsive, because they teach to and through the culture of the child and bring community concerns and values to the center of the teaching-learning process. Students are motivated to excel because they are doing important, authentic work to recover and preserve their heritage. They gain from the knowledge of museum professionals and the wisdom of community elders. They develop skills in research, writing, social studies, science, mathematics, information literacy, and twenty-first century information technology.
- *Cultural Revitalization* - A common concern among Native American peoples is the recovery and preservation of cultures and languages. Much of what remains of traditional material cultures resides in museum collections far from Native American communities. Virtual museum projects provide a way for communities to "digitally repatriate" precious items of cultural heritage. In the Four Directions Model, virtual museum activities also take place in the Native American communities, where students research and record local materials that supplement the museum's resources for the virtual museum. Local resources such as oral histories, cherished heirlooms, traditional stories, dances, and songs, native language and contemporary arts get combined with museum materials to present the vision of a vital, living culture.

- *Cultural Collaboration* – Museums exist to preserve heritage and educate the public, but Native Americans sometimes object to the way museum exhibitions appropriate cultural property. Native Americans want the public to have access to authentic knowledge of their histories and cultures, but they believe that some aspects of their cultures should not be shared with outsiders. Virtual museum collaborations provide a venue where thorny issues of cultural property rights may be addressed and protocols for cultural collaboration may be designed and levels of accessibility decided.

The Model in Action: Two Examples

In the fall of 1998, three of the Four Directions partner institutions—the Pueblo of Laguna Department of Education, the Univeristy of Texas, and the Smithsonian National Museum of the American Indian (NMAI), began the first collaboration that brought Native American students, teachers, and community members to the NMAI George Gustav Heye Center Museum in New York City to create virtual museums. To help guide this first virtual museum project, Dr. Paul Resta drafted a concept paper, which is the first explicit example of the Four Directions model for school-museum collaboration. In it, he explains the rationale for the collaboration in the following way:

> For many years, Native American culture was undervalued and suppressed in America. Although the richness of Native American historical and contemporary cultures has begun to be recognized, exemplary curricular materials based on this richness are rare. In addition, in a rapidly changing world, much traditional wisdom will be lost before there is an opportunity for Native American students to learn about their own history and culture, and to share what is sharable with the world community. Teachers trained in methods of cultural sensitivity and in the use of technology may provide leadership in the accessing, preserving, and sharing of Native American culture with the world community. One means of doing so is for Indian schools and communities to use technology to collaboratively develop *virtual museums* (Resta, 1998, p. 3).

Objects from the museum collections were to be selected by students and teachers in close consultation with community elders, who would help determine which objects were sharable and to add their own knowledge, and perhaps their own voices, to the virtual exhibition.

Local community participation and development were priorities in the original concept paper. Each school community that was to participate in the virtual museum project would send a team of students, teachers, and community elders to the museum to work on selecting, recording, and researching the materials to be included in the virtual museum. In addition, a summer program was proposed for each participating school community. In the summer program, community members would bring valuable cultural materials to the school so they may be recorded in digital photographs or QuickTime Virtual Reality for a local virtual museum. Local landmarks, natural settings, and historical sites would also be recorded. Students could record tribal elders speaking about important objects, people, events and places in English and their Native language to add to the local virtual museum. Some of the sharable locally-created materials may be used to supplement the materials offered on the virtual museum offered on the museum's server. In exchange, the media created at the museum could be "digitally repatriated" to the local community for use within the community. Thus, there were potentially two virtual museums emerging from each museum-school community partnership. One offered by the museum and accessible on the World Wide Web that offered only materials that tribal leaders had deemed sharable in that venue. And a second, local virtual museum that was to remain within the community thatl may include more sensitive materials for community access only (Resta, 1998).

For this first school-museum collaboration, every aspect of Resta's concept could not be met strictly, demonstrating the flexibility of the partnership. The NMAI was in the process of moving its entire collection to a new facility in Suitland, Maryland, which made the full collection inaccessible at the time of the proposed project. The items in the museum's current exhibitions, however, were accessible to the project. This meant that very few artifacts that reflected a given student's specific Native American culture would be available. A compromise was struck whereby students from several of the Four Directions schools would decide which items from the exhibitions would be featured in a virtual tour of the museum as seen through the eyes of American Indian children.

In the spring of 1999 two school teams, one from Santa Clara School (Pueblo, New Mexico) and one from Hannahville School (Potawatomi, Michigan), traveled to New York to digitally record and research the student-selected items from the NMAI exhibitions. These materials were assembled into the Virtual Tour of the National Museum of the American Indian, which has been accessible via the World Wide Web since February, 2000 (http://www.conexus.si.edu/VRTour). In May, 2000, Marty Indian School (Lakota, South Dakota) sent another team to extend the tour. The additional material will appear in the tour in fall 2000.

The virtual tour makes extensive use of QuickTime Virtual Reality (QTVR), which had been identified at the beginning of the Four Directions project as having a unique potential in educational applications. Training in the

creation of QTVR media has been offered to all of the Four Directions schools. There are two types of QTVR movies, panoramas and object movies. QTVR panoramas (panos) are made from a series of overlapping photographs taken from a tripod using a specially designed panning head. Software "stitches" the photographs into one seamless 360° scene. To interact with a panorama, one depresses the mouse button when the cursor is on the movie and moves the mouse cursor in the direction one wishes to "look" and the panorama scrolls in that direction. The second type of QTVR media is the object movie. It is made by placing an object on a turntable and taking a series of pictures at evenly spaced angles as the object is turned. To interact with a finished object movie, one depresses the mouse button when the cursor is over the movies and moves the mouse in the direction one wishes to rotate the object. A specially designed object rig enables the QTVR photographer to move a camera around an object vertically in order to make more complex object movies with both vertical and horizontal rotation. One may zoom in or zoom out of both types of QTVR movies. Also, invisible regions called hot spots may be painted anywhere on QTVR movies. Hot spots trigger special actions when clicked on, such as launching a new web page, labeling a spot on an object or in a pano, or bringing up close details of an object.

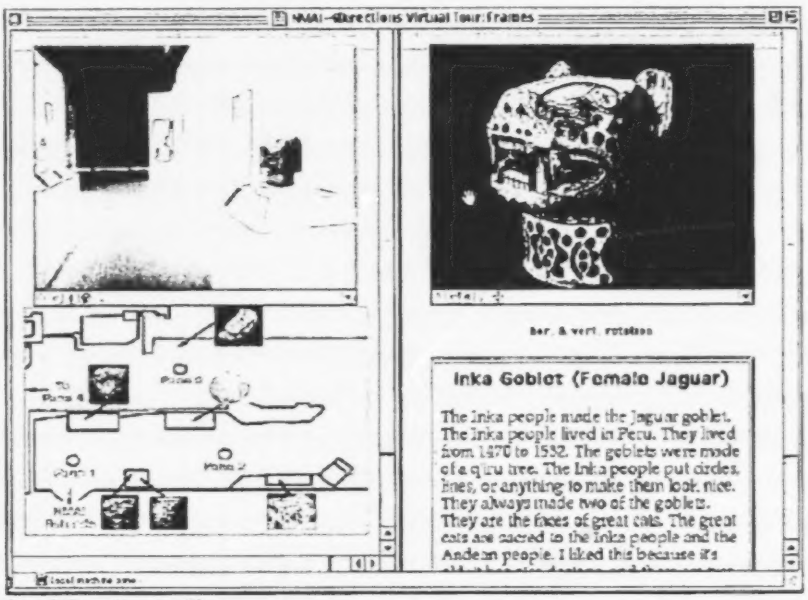
Inka Goblet (Female Jaguar)
The Inka people made the jaguar goblet. The Inka people lived in Peru. They lived from 1470 to 1532. The goblets were made of a q'iru tree. The Inka people put circles, lines, or anything to make them look nice. They always made two of the goblets. They are the faces of great cats. The great cats are sacred to the Inka people and the Andean people. I liked this because it's

Figure 1: NMAI Virtual Tour Screen Shot

Both types of QTVR were used in the finished Virtual Tour, with the panoramas of the exhibition space serving as an interface for accessing the featured objects selected by the students. Clicking on a hot spot over the museum display of a featured object will cause the QTVR object to load in a separate frame, accompanied by an interpretive essay written by a student. Clickable floor plans of the exhibition space offer another method of navigating the virtual tour and accessing the virtual objects (see Figure 1)

Of the three schools participating in the NMAI virtual museum project, Hannahville has been the most successful in involving the local community in the creation of a local virtual museum using local resources. In a three-day open house session at the school, community members brought native arts, crafts, costumes, and cultural items that students recorded in digital photography and QTVR. Students wrote essays on the objects and used digital sound recording to add their voices to annotate their virtual exhibits. They used oral history techniques to record community members' renditions of traditional stories for their virtual museum. A year later, the school found a private museum in the region that gave them full access to its collection of Anishnaabe and historical items to add to their ongoing virtual museum efforts, an interdisciplinary effort which now involves the school at all grade levels. A publicly accessible component of the school's virtual museum activities is on the World Wide Web (http://www.hvl.bia.edu).

Figure 2: The Heard Virtual Museum CD-ROM

The Heard Museum in Phoenix, Arizona, is another Four Directions museum partner that has been involved in virtual museum projects with three other schools. In May, 2000, students and teachers from Dilcon Boarding School (Navajo, Arizona), Seba Dalkai School (Navajo, Arizona), and Laguna Elementary School (Pueblo, New Mexico) spent four days at the museum, documenting items for the purpose of illustrating virtual museum projects in their communities. Dilcon Boarding School and Seba Dalkai School combined the media that students created at the Heard with oral histories, QTVR panoramas and photographs created locally to make a virtual museum of the schools histories. Laguna Elementary School will use the media its students created for a virtual tour of the Pueblo of Laguna community. Teachers and project partners used HyperStudio to author the virtual museums, which were distributed to the Heard Museum and the three schools on CD-ROM. The Heard Museum plans to use the CD-ROM as part of an exhibition on American Indian boarding schools.

The Benefits of Virtual Museum Projects

Since these initial virtual museum projects, several other schools in the Four Directions project have been actively planning to implement similar partnerships with local and regional museums that have cultural items which hold special meaning for the school communities. Four Directions students, teachers, and school communities are modeling how other Native American schools can plan and develop virtual museums that inform the world at-large while they return images of objects to their cultural homelands. Created by Native people, these projects provide a venue for cultural collaboration and cultural exchange. It is an act of cultural recovery as it returns to the Native community objects long removed form their origins.

The Four Directions model also holds important benefits for the museum community. As professionals at the National Museum of the American Indian testify, the Four Directions project benefits the museum in several ways. First, it provides a way to fulfill part of the museum's mission, which is to be of service to its constituents (Native Ameicans) and to reach out beyond the walls of the museum to teach the museum's public (non-Indians) about the culture and histories of the Native people of the Western Hemisphere. The NMAI recognizes that it has a special responsibility to the people whose ancestors made the objects in the collections. Native Americans have said they want the museum to help them preserve their cultural heritage and to share its resources with Native communities. The Four Directions Project provides a collaborative framework in which to leverage the vast cultural and human resources of the NMAI. The NMAI, in collaboration with the University of Texas and with other Four Directions partners can help Native American students learn new technologies, contribute to cultural preservation and share the resulting project with people all over the world, many of whom will not be able to visit the exhibitions

in New York. One of the exhibitions in the Virtual Tour has been dismantled to make way for a new exhibition. It is now only available on the World Wide Web.

The Four Directions model may also be adapted to other student populations with different cultural backgrounds. The contributions that minority and subordinated cultures make to the rich tapestry that is America are not given their full significance in the standard curriculum. Museums and local communities have resources that can rectify this shortcoming. The Four Directions model of school-museum collaboration for the creation of virtual museum is one culturally responsive strategy for taking advantage of those resources.

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